Animals usually positive; may be temporarily negative, as in the frog.

*Type D. Response to definite objects in the visual field.*—Not simple reactions; responses involve psychical phenomena. Respond (1) to moving objects; (2) to stationary objects. This form of response usually inhibits ordinary phototropic reactions. JOHN G. MCKENDRICK.

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## SIR W. H. PERKIN, F.R.S.

WITH deep regret the whole scientific world will hear of the death of Sir William Henry Perkin, F.R.S., the founder of the coal-tar colour industry, and one of the most distinguished of British chemists. Sir William Perkin passed away at his residence, Sudbury, on Sunday, July 14, after four days' illness, the cause of death being double pneumonia and appendicitis. Especially affecting will be the news to his London friends, among whom his bodily vigour and mental energy had, even up to the last, been the envy of many a younger man.

Born on March 12, 1838, William Henry Perkin was educated at the City of London School, and at fifteen commenced his studies under A. W. Hofmann at the Royal College of Chemistry. During the Easter vacation in 1856 he discovered mauve, and, supported by his father and brother, immediately began its manufacture under the name of "Tyrian Purple." The importance of this discovery, which has given birth to the extensive industry of coal-tar colours, was fully recognised at the Jubilee celebrations last year, when Dr. Perkin was presented with congratulatory addresses from all the important chemical societies of the world, and also received the honour of knighthood. Messrs. Perkin and Sons not only introduced the first aniline dye into commerce, but soon began to manufacture alizarin, in itself the first member of an important series of dyestuffs which are still to-day classed among the most valuable colouring matters used by dyers and printers. In 1873 the Greenford Green aniline-dye factory was sold, and the business finally transferred to Silvertown, where the manufacture of alizarin is still being carried on with success.

Perkin now devoted himself to laboratory work, and soon discovered the valuable method of synthesis of unsaturated aromatic acids, such as cinnamic acid, which bears his name. He also effected the synthesis of coumarin, the odorous principle of the Tonka bean. Later, he turned his attention to the magneto-optical properties of organic compounds, and enriched chemistry with a series of researches on this subject, of which the last account appeared in the Journal of the Chemical Society for May of the present year. In all he contributed about ninety original papers, published chiefly in the Journal of the Chemical Society.

The value of Perkin's work was not left unrecognised; the Royal Society made him a Fellow in 1866, he was awarded the Royal medal in 1879, the Davy medal in 1889, the Longstaff medal of the Chemical Society in 1888, the Albert medal of the Society of Arts in 1890, and the Birmingham medal of the Gas Institution in 1892. These were followed by the Hofmann medal of the German Chemical Society and the Lavoisier medal of the French Chemical Society in 1906. He held honorary degrees from Würzburg and Heidelberg (Ph.D.), St. Andrews (LL.D.), Manchester and Leeds (D.Sc.), and Munich (Dr.Ing.).

Sir W. Perkin married, in 1859, a daughter of the late Mr. John Lissett, and, some years after this lady's death, the daughter of Mr. Hermann Mollwo. Few fathers can have had the same happiness as he in seeing his three sons distinguish themselves in his favourite science.

Loved by his neighbours at Sudbury for his philanthropic work, respected and admired by his scientific friends the world through, all were instinctively attracted by Sir William Perkin's equable and amiable temperament, and unite in deploring the loss which they and the nation have sustained. J. C. CAIN.

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## NOTES.

WE regret to see the announcement of the death of Dr. A. Dupré, F.R.S., on Monday, July 15, at seventy-one years of age.

WE learn with regret of the death, on July 13, of Prof. Heinrich Kreutz, who for many years acted as editor of the *Astronomische Nachrichten*.

THE eleventh International Navigation Congress is to be held at St. Petersburg in May, 1908.

THE American Academy of Arts and Sciences has awarded the Rumford premium to Mr. E. G. Acheson "for the application of heat in the electric furnace to the industrial production of carborundum, graphite and other new and useful substances."

DR. ARTHUR J. EVANS, F.R.S., describes in the *Times* of July 15 some further discoveries made by Dr. Mackenzie and himself, during the past two months, in the great prehistoric Palace of Knossos. The net result of these investigations is to show that an additional area of some three thousand square yards must be added to the palace. At a short distance from the actual "House of Minos," two beehive tombs have been found belonging to a period about 800 B.C., and their contents are of deep interest. If the accurate astronomical orientations have been measured of the structures now revealed, the results will be of great value.

A SMALL exhibition of science apparatus, mostly for chemistry and physics, is being arranged by Mr. R. E. Thwaites, of Wyggeston Grammar School, in connection with the forthcoming meeting of the British Association at Leicester.

THE Recorder of Section I (Physiology) of the British Association informs us that an important change has been made in the provisional programme for the Leicester meeting announced in last week's NATURE. On August 6 there will be no discussion on antitoxins, but instead one on the value of perfusion experiments. This will be opened by Prof. E. A. Schäfer, F.R.S., and will probably be of considerable interest to expert physiologists. To the list of those who will take part in the discussion on the physiological and therapeutical uses of alcohol has now been added the names of Prof. Cushny, and Drs. Dixon, Rivers, and Waller; Prof. Zuntz, Prof. Schäfer, Dr. Reid Hunt, and Prof. Sims Woodhead.

IN connection with the retirement of Prof. G. Lunge from the chair of technical chemistry at Zurich, of which mention was made in last week's issue of NATURE, an interesting farewell meeting was held on July 10 at Zurich Polytechnic. The occasion was the distinguished chemist's last lecture hour, and, in addition to the students, most of his fellow professors and some from the neighbouring university had assembled. On Prof. Lunge's entry into his lecture theatre all rose in silence. After an interval Prof. Treadwell, professor of analytical chemistry, made a short speech in which he eulogised Prof. Lunge's work, and afterwards read an address from the whole of the teaching staff. An address from the students was also read. Prof. Lunge made a suitable reply, and the whole audience showed by its enthusiasm the high regard in which he is held and the regret felt at his retirement.

The Paris correspondent of the *Times* states that the French Government has just asked Parliament to grant a fresh credit of 12,000*l.* in order to prepare a new French expedition to the Antarctic. Some four or five months ago the Academy of Sciences declared that a new expedition would be of great scientific utility as well as an act of patriotism which would benefit the whole world; and it appointed a commission to draw up a scientific programme of work. The expense is estimated at 30,000*l.*, of which the State is to provide 24,000*l.* The 12,000*l.* now asked for by the Government will be immediately used for the construction of the special ship necessary for the expedition.

A long excursion, extending from August 15 to August 24, has been arranged by the Geologists' Association. The district selected is Appleby and its surroundings, and the party will be under the direction of Dr. J. E. Marr, F.R.S. Interesting observational work has been allocated for each day, and the arrangements which have been made for visitors will ensure comfort at a moderate expense. The party will leave Euston at 11.30 a.m. on August 14, and geologists who wish to avail themselves of the opportunity offered should communicate with Mr. A. C. Young, 17 Vicar's Hill, Lewisham, S.E. The association has arranged an excursion also in connection with the centenary celebrations of the Geological Society in September next. The excursion will be to Reading on September 28, and will be conducted by Messrs. H. W. Monckton, O. A. Shrubsole, and H. J. Osborne White.

The Mackinnon studentship of the Royal Society in physical science has been awarded for a second year to Mr. W. Geoffrey Duffield, for a research on the influence of pressure on spectra, being conducted at the University of Manchester; and the studentship in biology to Dr. H. M. Woodcock, to aid him in working out the life-history of certain hæmatozoa of birds, an investigation which will be carried on at the Lister Institute of Preventive Medicine. The income of the Gunning fund accrued during the past three years has been placed at the disposal of Dr. F. H. Scott for the continuation of his investigations into the metabolic processes in nerve cells. The election to the Joule studentship of the Royal Society will be made at the end of July.

The Commission appointed by the Presidents of the Board of Agriculture and Fisheries to inquire into the nature of distemper in dogs in Great Britain and the methods of its infection, and to report whether any, and if so what, preventive or remedial measures, exclusive of ordinary medical treatment, can with advantage be taken with respect to it, has now been fully constituted as follows:—The Duke of Beaufort, Lord Middleton, Lord Leconfield, Sir John McFadyean, Mr. E. Barclay, Mr. S. Stockman (chief veterinary officer to the Board of Agriculture and Fisheries), Mr. W. M. Wroughton, and Mr. E. W. Jaquet (secretary of the Kennel Club). The chairman of the commission will be Lord Middleton, and Mr. James Ralph Jackson (veterinary inspector, Board of Agriculture and Fisheries, 4 Whitehall Place, S.W.) will be secretary.

H. C. Plummer

A distinguished experimental physicist has been lost by the recent death of M. André Prosper Paul Crova, formerly professor of physics at Montpellier, and since 1886 a correspondant of the Paris Academy of Sciences. M. Crova was born in 1833 at Perpignan, and after receiving his education there became, at the age of twenty, professor of physics in the local Collège. Six years later he filled the same position in the Lycée at Metz. In 1864, M. Crova went to Montpellier, where, first at the Lycée and after 1870 in the Faculty of Science, he occupied a chair of physics. His most important work was devoted to the study of radiant energy, and included a classical determination of the constant of solar radiation. In addition to his well-known researches in this field he occupied himself very largely with optical and electrical problems of a general character, and published a large number of memoirs. As an experimentalist he possessed great skill and practical ingenuity in carrying out researches of very great difficulty, and to his inventive power are due several valuable instruments, including, besides his actinometer, an optical pyrometer and a spectrophotometer.

The death of Sir William Broadbent, which occurred on July 10 after a long illness, removes a figure well known in the medical world. Those who saw the active interest he took in the meeting of the British Medical Association at Toronto last August little thought that he would soon be laid low, never to rise again. Born in the early part of 1835, he had completed his seventy-second year. He was educated at Huddersfield College, at Owens College, Manchester, and at the Royal School of Medicine at Manchester, graduated as M.B. in the University of London in 1858, taking the M.D. degree two years later. Early in his medical career he became associated with St. Mary's Hospital, of which he was successively assistant physician, physician, and consulting physician. As a clinician he had few rivals, and his teaching was thorough and painstaking. In 1870 he enunciated the hypothesis, since known as "Broadbent's law," on the association of nerve nuclei, by which he sought to explain the immunity of bilaterally associated muscles from paralysis in hemiplegia. He was also much interested in diseases of the heart, on which and on the pulse he wrote standard text-books and published a number of papers on clinical subjects. During the latter years of his life he took an active part in movements associated with the public health and the good of the profession, notably in the crusade against tuberculosis and in cancer research. He was a Fellow of the Royal Society, had bestowed on him many honorary degrees, and was physician-in-ordinary to His Majesty. He received his Baronetcy on the occasion of the marriage of the present Prince of Wales, and was a Knight Commander of the Victorian Order.

Hewlett

The report of the Birmingham Natural History Society for 1906 records the incorporation with that body of the Midland Malacological Society, which now forms a malacological section. Another important event in the society's career during the period under review was the transference of the offices and library to Avebury House, Newhall Street, where it has been found possible to arrange all the books in one room.

We have received from the author, Mr. L. M. Lambe, of the Canadian Geological Survey, copies of two papers published in the *Ottawa Naturalist*. One deals with a tooth of a musk-ox from a Canadian Pleistocene deposit, while the other records the occurrence of a supernumerary upper premolar in a dog. As dogs normally possess the full series of four upper molars, the occurrence of an additional one is more noteworthy than would be the case were three the normal number of these teeth.

THE wide circulation of "Pokorny's Naturgeschichte der Thierreichs" is indicated by the appearance of the twenty-seventh edition not very long subsequent to the issue of its predecessor. This edition, published by G. Freytag, of Leipzig, is edited by Mr. Max Fischer, and illustrated by twenty-four coloured plates, in addition to the woodcuts. A new feature is an appendix, in which the proper care of the human body and its various parts is briefly described. The proper standard of weight, the amount of sleep and food necessary to be taken, and the care of the eyes are some of the subjects discussed in this appendix, which can scarcely fail to be useful.

CONSIDERABLE importance attaches to an account of the skull of the Cretaceous pliosaurian genus Brachauchenius given by Mr. S. W. Williston in No. 1540 (vol. xxxii., pp. 477–489) of the Proceedings of the U.S. National Museum. Brachauchenius, which is known from West Kansas, is regarded by its describer as closely related to Pliosaurus, from which it differs in having single-headed cervical ribs. From other plesiosaurians in which the skull is fully known it differs in that the palatines meet each other in the middle, but this is a feature which the author thinks will be met with in Pliosaurus. The assumed relationship of the plesiosaurs to chelonians is disputed. The latter lack, for instance, epiphyses to the humerus, while such resemblance as exists between the shoulder-girdle in the two groups is due to adaptation. Chelonians are without the parietal foramen of plesiosaurs, and retain the hypocentral mode of articulation of the ribs, whereas in plesiosaurs the ribs are attached to the transverse processes. Sauropterygia are, indeed, probably descended from theriodont ancestors, while Chelonia appear derived from a cotylosaurian type, both being widely sundered from ichthyosaurs and rhynchocephalians.

AMONG fifteen recent issues of the Proceedings of the U.S. National Museum, special reference may be made to three (Nos. 1543, 1547, and 1551) by Mr. A. H. Clark, on new and other crinoids. The most important novelty is *Phrynocrinus nudus*, a new genus and species from Japanese waters, described in No. 1543. In general shape the calyx is acorn-like, and it is further remarkable for the presence of broad spaces between the radial, covered with a leathery skin, showing no external signs of radial plates. In the author's opinion, this crinoid probably indicates a family by itself. The same paper contains the description of a new species of Bathycrinus, also from Japan. *Ptilocrinus pinnatus*, described in No. 1547, is a new genus and species, from the neighbourhood of the Queen Charlotte group, allied to Bathycrinus, but characterised by a peculiar feather-like arrangement of the radials. Japanese crinoids of the genus Eudiocrinus, one of which is regarded as new, form the subject of the third paper (No. 1551). In No. 1548 Mr. P. Bartsch describes a gastropod of the genus Eulima parasitic in the calyx of Ptilocrinus. In three specimens the proboscis was found to be deeply embedded in the calyx of the crinoid; no other Eulima is believed to be parasitic.

MR. M. J. NOWAK communicates to the *Bulletin international de l'Academie des Sciences de Cracovie* (January) a description of fossil plant-leaves found in the Upper Senonian beds at Potylicz in north Galicia. The leaves are typical of evergreen xerophilous plants, among the genera represented being Gleichenia, Cunninghamia, Quercus, Myrica, Eucalyptus, and Aralia. Mr. W. M. Kudelka presents a paper on the comparative anatomy of the vegetative organs of species of Ribes.

THERE are many difficulties militating against the successful exploitation of new woods from the colonies and foreign States, but with a little care it should be possible to provide fair, representative specimens for show or report. Mr. H. Stone, who has handled numerous collections in recent years, offers some hints on the subject in the Journal of Economic Biology, vol. iii., part i. He attaches special value to cylindrical samples with a dome-shaped top as showing every variation of grain from the radial to the quarter.

THE report of the Midland Reafforesting Association for 1906 announces the formation of three small plantations at Walsall, Bloxwich, and Wolverhampton, the two former on pit waste, the latter on a sand-pit. The three local committees at Old Hill, Walsall, and Wednesbury have been augmented by two new committees for Wolverhampton and Ocker Hill. An arbor-day festival was held in some of the districts to interest the children in the preservation of the trees. The association still lacks the services of a paid secretary owing to insufficiency of funds.

ROYAL assent was given on July 4 to "The Destructive Insects and Pests Act, 1907," and the Board of Agriculture and Fisheries will now be able, under this new law, to issue an order against the American gooseberry mildew. Mr. E. S. Salmon, mycologist to the South-Eastern Agricultural College, Wye, sends us a letter in which he emphasises the necessity for growers to cooperate with the Board to stamp out this new pest. The disease has been allowed seven years' start in Ireland and two or three years' start in England. Now that the Board of Agriculture has acquired the necessary legislative powers to deal with the disease, it behoves all growers and gardeners generally to cooperate heartily with the Board if they wish to see the American gooseberry mildew stamped out and their gooseberry plantations kept healthy. Up to the present, the outbreaks that have occurred in England are as follows:—Kent, on standard gooseberries only in one nursery (disease believed to be now stamped out); Worcestershire, thirty-one outbreaks in gooseberry plantations; Gloucestershire, one outbreak; Wisbech and district, two outbreaks; Warwickshire, one outbreak.

BRILLIANT weather has at length set in over the whole of the British Isles, and the failure of summer, which threatened for so long, has fortunately not been realised. The past records of temperature for London fail to show any previous first fortnight of July as cold as that of the present year. The sheltered thermometer did not touch 70° from July 1 to 14, and the observations since 1841 show no corresponding period without that temperature being reached, and in most years a reading of 80° is shown, whilst in some years the thermometer registers 90°. On July 15 the thermometer in London registered 77°, which is the highest temperature since May 11 and 12. The whole type of weather has changed, and the persistent cyclonic disturbances have at last given place to an anticyclone, which during the present week has embraced practically the whole of England.

THE volume of rainfall observations (*Nedbφriagttagelser,* vol. xii.) published by the Meteorological Institute of Norway for 1906 is a most important contribution to that branch of meteorological science. The institute, under the able superintendence of Prof. H. Mohn, deals with about 430 rainfall stations for the year in question, and includes means from seventy-seven additional stations at which observations have now been discontinued. Daily observations are given for 200 places, and daily statistics relating to snowfall for some fifty places. The monthly and yearly summaries for the whole 507 stations include means for past years, in some cases going back to 1867. The maps which accompany the volume are very clear, and exhibit the rainfall for the year 1906 by lines showing equal amounts (isohyets); the amounts on the *west coast* between lat. 59° and 62°, the usual track of the Atlantic storms, range from 1200 mm. to 3000 mm. at some few points, while inland the amounts vary from 400 mm. to 800 mm. yearly.

THE Director-General of Indian Observatories has issued a memorandum, dated June 8, on the abnormal features of the weather of the past half-year, with a forecast of the probable character of the south-west monsoon rains of 1907. From the various conditions affecting the question, all of which are clearly stated, the outlook for the total rainfall of India during the period June to September does not appear on the whole to be unfavourable; it seems, however, likely that the effect of the heavy and late snowfall will show itself in north-west India in the delay of the establishment of the monsoon, or in diminished rainfall. An interesting fact in connection with the investigation is mentioned by Dr. Walker, viz., that statistical analysis shows that when estimating the amount of monsoon rainfall corresponding to a given pressure distribution and a given frequency of sun-spots, the influence of solar activity upon Indian rainfall is almost exactly that which corresponds to the disturbance in the pressure distribution caused by the solar activity.

IN the Journal of the Meteorological Society of Japan for April, Dr. T. Okada gives several interesting instances of the occurrence of Föhn winds at Wonsan, one of the seven observatories of the first order established by the Japanese Government in Corea in 1904. The station lies on the eastern coast, in lat. 39° 9′ N., and is surrounded by high mountain ranges, except on the east side. The phenomenon is almost always associated with westerly winds, and causes abnormally high temperature and excessive dryness of the air as compared with that obtaining at other stations. In another article Dr. Okada discusses the effect of snow upon the diurnal variation of temperature in the lower parts of the atmosphere, based on hourly observations at various depths at Hokkaido in February last. The total daily heat exchange in the snow on the ground was found to be approximately 19 gram-calories per square centimetre; the amount of the exchange on clear days was nearly double that on cloudy days. Other articles (in Japanese) deal with periodicity of earthquakes, and density of snow and evaporation from its surface.

PROF. H. POTONIÉ has issued a fourth edition of his pamphlet on the origin of coal (Berlin: Borntraeger Brothers, 1907). In its present form it covers forty-seven pages, and contains twenty-eight admirably reproduced illustrations. The author's views are well known, and we are pleased to note that he intends shortly to publish an exhaustive work on the subject.

THE British standard specification for material used in the construction of railway rolling-stock (Report No. 24 of the Engineering Standards Committee) has been re-published in revised form. Several important alterations have been made. In the specification for steel castings, the number of tensile and bend tests required for waggon-wheel centres has been reduced, as it was considered that the quantity asked for under the existing specification was somewhat in excess of that usually obtaining in general practice. For locomotive-wheel centres cast with heavy balance weights it has been made permissible to reduce the height of the fall in the drop test. In connection with the specification for copper and brass tubes for locomotive boilers, an alternative drifting test has been added to the clause dealing with the bulging test. The principal alterations in the specifications dealing with steel plates for locomotive boilers, locomotive frames, and carriage and waggon frames, are in connection with the new standard iv. diameter test-piece for bars of more than 1 inch diameter. This shorter test-piece has been introduced to reduce the amount of material required for testing and the amount of turning down when such is necessary.

IN the Journal of the Franklin Institute (vol. clxiii., No. 6) there is a lengthy paper by Dr. William Campbell on the changes in structure in iron and steel, in which the changes that take place in the iron-carbon series are considered in the light of recent work. He considers that the cementite-martensite series is the unstable one. Absence of silicon and rapid cooling tend to cause white cast iron to be formed. Grey cast irons are the martensite-graphite series, which occur with much silicon and slow cooling. The formation of graphite is due to the decomposition of cementite by re-heating to temperatures of about 1000° C. Most cast irons are a mixture of white and grey, or cementite, martensite, and graphite. The simultaneous occurrence of cementite and graphite in certain specimens of siliconless irons cannot be explained satisfactorily except by assuming that there are two systems, (*a*) ferrite and graphite, and (*b*) ferrite and cementite. This does away with the necessity of assuming a reaction between graphite and martensite to form cementite at about 1000° C. In this paper the term martensite is used in its old meaning, the solid solution of carbon in iron. Now, however, the solid solution is known as austenite, and martensite is regarded as a transition product.

NOTWITHSTANDING the much improved statistics recently issued by the Lunacy Commissioners, thoroughly satisfactory materials are still wanting for solving the question whether the prevalence of insanity is or is not increasing. The importance of the problem, especially in its bearing on the persistently urged theory of progressive physical deterioration, imparts special interest to a paper by Mr. Noel A. Humphreys on the alleged increase of insanity, published in the Journal of the Royal Statistical Society (vol. lxx., part ii.). This paper shows in a striking manner the value of scientific statistics in checking crude figures. The author expresses a decided opinion that there is no absolute proof of actual increase of occurring insanity in England and Wales, and that the continued increase in the number and proportion of the registered and certified insane is due to changes in the degree and nature of mental unsoundness for which asylum treatment is considered necessary, and to the marked decline in the rate of discharge (including deaths) from asylums.

IN an article entitled "The Measurement of Nerve Force," contributed to the May number of the *Contemporary Review*, Dr. A. T. Schofield describes experiments with an instrument called the "sthenometer," which, it is suggested, provides a means of measuring an unknown "nerve force" emanating from the human organism. The instrument consists essentially of a straw balanced on a needle point and placed under a glass case. When a hand is brought close to the glass, at right angles to the straw and with the tips of the fingers opposite the end of the straw, a motion of the straw toward the hand is obtained. Dr. Schofield concludes from evidence of this kind that the "movement is produced in the sthenometer by some unknown force emanating from the right and left hands that can move a straw over a very considerable arc." It was shown, however, by Messrs. F. J. M. Stratton and P. Phillips in the Journal of the Society for Psychical Research for December, 1906, that heat radiated from the hand is the cause of the motion of the balanced straw of the sthenometer. Hot objects were observed to produce the same effects, and the extent of the motion was found to increase with the heat radiated from the hand as indicated by a thermopile. With the results of these experiments before us, and also a note by Mr. Stratton in the March number of the Journal of the society, it is difficult to understand why the effect described should be supposed to be produced by an unknown force. Much more substantial evidence will be required than that adduced in the article in the *Contemporary Review* before any firm foundation can be secured for the position taken up by Dr. Schofield.

THE three official articles, on the work done at the Physikalisch-Technische Reichsanstalt during the year 1906, which appeared in the April, May, and June numbers of the *Zeitschrift für Instrumentenkunde*, have now been issued as a separate pamphlet. In addition to statistics showing how the work of the institution is growing, short summaries of the principal conclusions arrived at during the course of the year's work are given, and greatly enhance the interest and value of the publication. As typical examples may be mentioned the paragraphs on the expansion of bodies at very high and at very low temperatures, on the comparison of the various temperature scales at high temperatures, on the self-inductance of lead-covered and other cables, and those on the comparison of the methods of testing magnetic materials. Apart, however, from its scientific value, there is one feature of the report which teaches us an important lesson, that is, the close contact which exists between the institution and the manufacturers of Germany. Almost every official, from the president downwards, has spent some time during the year in visiting the works of clients of the institution, "um persönlich Fühlung mit der Industrie zu nehmen," to quote the words of the report. How long will it take us to learn this lesson?

AN important series of determinations of fundamental atomic weights is described by Prof. T. W. Richards, in conjunction with several of his students, in No. 69 of the Publications of the Carnegie Institution. The atomic weight of potassium was re-determined by ascertaining the ratio of the weight of potassium chloride to that of the silver chloride it produces when precipitated by means of almost exactly the theoretical quantity of silver nitrate. By using a Gooch crucible with a matting of platinum sponge the weight of the silver haloid formed could be determined with a high degree of accuracy, a correction being introduced for the minute quantities of silver chloride retained in the mother liquors. A similar series of determinations was also made with potassium bromide by converting the latter into silver bromide. In both series exactly the same value, 39·114, for the atomic weight of potassium was obtained (Cl=35·473, Br=79·953). Determinations were also made, introducing many new refinements, of the weight of silver nitrate formed from a known weight of silver; the results are of especial interest, inasmuch as they are incompatible with the low value recently advocated for the atomic weight of nitrogen if the atomic weight of silver be taken as 107·93; assuming this value, the atomic weight of nitrogen becomes 14·037. The atomic weight of sulphur was also determined by a new method based on the conversion of silver sulphate in a quartz tube into silver chloride by means of gaseous hydrogen chloride. The change takes place in a manner very favourable to accurate results, and gives a value 32·113 for the atomic weight of sulphur (Ag=107·93), which is considerably higher than that accepted hitherto. An interesting account of the general principles underlying recent determinations of atomic weights was given by Prof. Richards in a lecture delivered before the German Chemical Society, and printed in the current number of the *Berichte*.

THE Board of Agriculture has published colour-printed geological maps of Worms Head (Sheet 246). The map is issued in two editions (price 1*s*. 6*d*. each), on one of which (the solid edition) glacial deposits are omitted, while on the other (the drift edition) such deposits are indicated by colour. The scale is 1 inch to the mile.

THE latest list issued by Messrs. Voigtländer and Son, of 12 Charterhouse Street, E.C., is a handsome production. It contains numerous examples of photographs taken with various types of lenses made by this firm, and is in addition provided with an excellent introduction by Dr. H. Harting on the selection of photographic lenses and cameras.

THE Livingstone College Year-book for 1907 contains the annual report, extracts from letters from old students, hints on diet and hygiene in the tropics, &c. The college gives a training in elementary medicine and surgery to missionaries, and is doing much good work.

DR. M. MOSZKOWSKI has translated into German Prof. T. H. Morgan's work on "Regeneration," and the volume is published by Mr. W. Engelmann, Leipzig, at the price of twelve marks. Prof. Morgan has provided his translator with new material relating to facts and theories of scientific importance published since the first or English edition appeared in 1901, and this has been incorporated in the German edition. At the end of the chapter on the theories of regeneration, Prof. Morgan states the views he now holds concerning some questions of fundamental interest.

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## *OUR ASTRONOMICAL COLUMN.*

COMET 1907*d* (DANIEL).—Several observations of this comet are recorded in No. 4188 of the *Astronomische Nachrichten* (p. 207, July 4). Observing at Kremsmünster on June 24, Prof. Fr. Schwab saw a nebulous body of about 2′ diameter with a bright nucleus; the comet disappeared in the dawn simultaneously with stars of the ninth magnitude. Herr van Biesbroeck, with the 15-inch refractor at Uccle, found the magnitude to be 8·5 for the whole comet, on June 19, this being decidedly brighter than on the previous day. On June 27 Prof. Hartwig saw a bright centrally-placed condensation. On July 4, Dr. Lappa, observing at Rome, found the magnitude of the nucleus to be between 6.0 and 7·0.

This object now rises about midnight, about four hours before the sun, and may be seen with a good field-glass.

COMET 1907*c* (GIACOBINI).—Dr. Strömgren continues his daily ephemeris for comet 1907*c* in No. 4189 (p. 223, July 6) of the *Astronomische Nachrichten*, and carries it forward to July 31. This object is now travelling in a south-easterly direction through the constellation Virgo, and its brightness is only about half that at the time of discovery, its magnitude then being 13·0.

THE ORBIT OF α CENTAURI.—Finding that his second set of elements does not represent the angles measured at periastron passage, and having many more observational results on which to base his calculations, Prof. Doberck has re-investigated the orbit of α Centauri, and publishes